



Biomass Program

Integrated Biorefineries R&D

Gasification-Based Fuel Conversion and Electricity Production in the Forest Products Industry

Boise Cascade Corporation and the Gas Technology Institute are cooperating to develop, demonstrate, and place in operation an advanced biomass gasification-based power generation system. The system would be suitable for near-term commercial deployment in the forest products industry (e.g., pulp and paper mills), and would be used in conjunction with existing wood waste fired boilers and flue gas cleanup systems.

One of the challenges presented by the project will be to overcome the major hurdles of high-pressure gasification, which include high-pressure fuel feeding, ash removal, and hot gas cleaning.

The partners will focus on creating a power generating system that minimizes capital intensity and technology risks. The object is to cost-effectively design a system that meets the immediate needs of the forest products industry for highly efficient and environmentally sound electricity and steam generation while utilizing existing wood waste as a fuel resource.



Photo: NREL

R&D Pathway

Initial activities include the selection and evaluation of up to three candidate demonstration sites and suitable feedstocks. Process modeling will be performed for each site using biomass gasification databases to develop gasifier heat and material balances, perform gasifier sizing calculations, predict product fuel gas compositions, and define process input and output flow ranges for candidate feedstocks.

Additional studies will be conducted on design of the indirect heater and stoker boiler parameters. Later stages of the project will focus on gas turbine selection, integration of power systems, and a detailed evaluation of capital and operating costs for each candidate demonstration site.

Benefits

- Enhance the utilization of wood waste as a fuel resource

Applications

A biomass gasification-based power system could be used in conjunction with existing wood waste technologies in operating pulp and paper mills.

Project Participants

Boise Cascade Corporation
Carbona
DB Riley, Inc.
Gas Technology Institute
Nexant, Inc.
Solar Turbines, Inc.
University of N. Dakota Energy & Environmental Research Center

Project Period

FY 2003 – FY 2004

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Visit the Web site for the Office of the Biomass Program (OBP) at
www.eere.energy.gov/biomass.html

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